Universidad de Navarra

Is there a space for an industry focused research in academia?

I. What can academia offer

López de Cerain A. Faculty of Pharmacy and Nutrition. **acerain@unav.es**

- Is Academia – Industry colaboration possible?
- Is the University preparing the professionals needed by the industry?
- What can academia offer to the industry?

Harvard University

QS World University Rankings. TOP 1:
Medicine, Biological Sciences, Pharmacy & Pharmacology

University mission:

- **Education of professionals** and future leaders
- **Research** to generate new knowledge and foster the progression of science and society

In the field of Health Sciences:

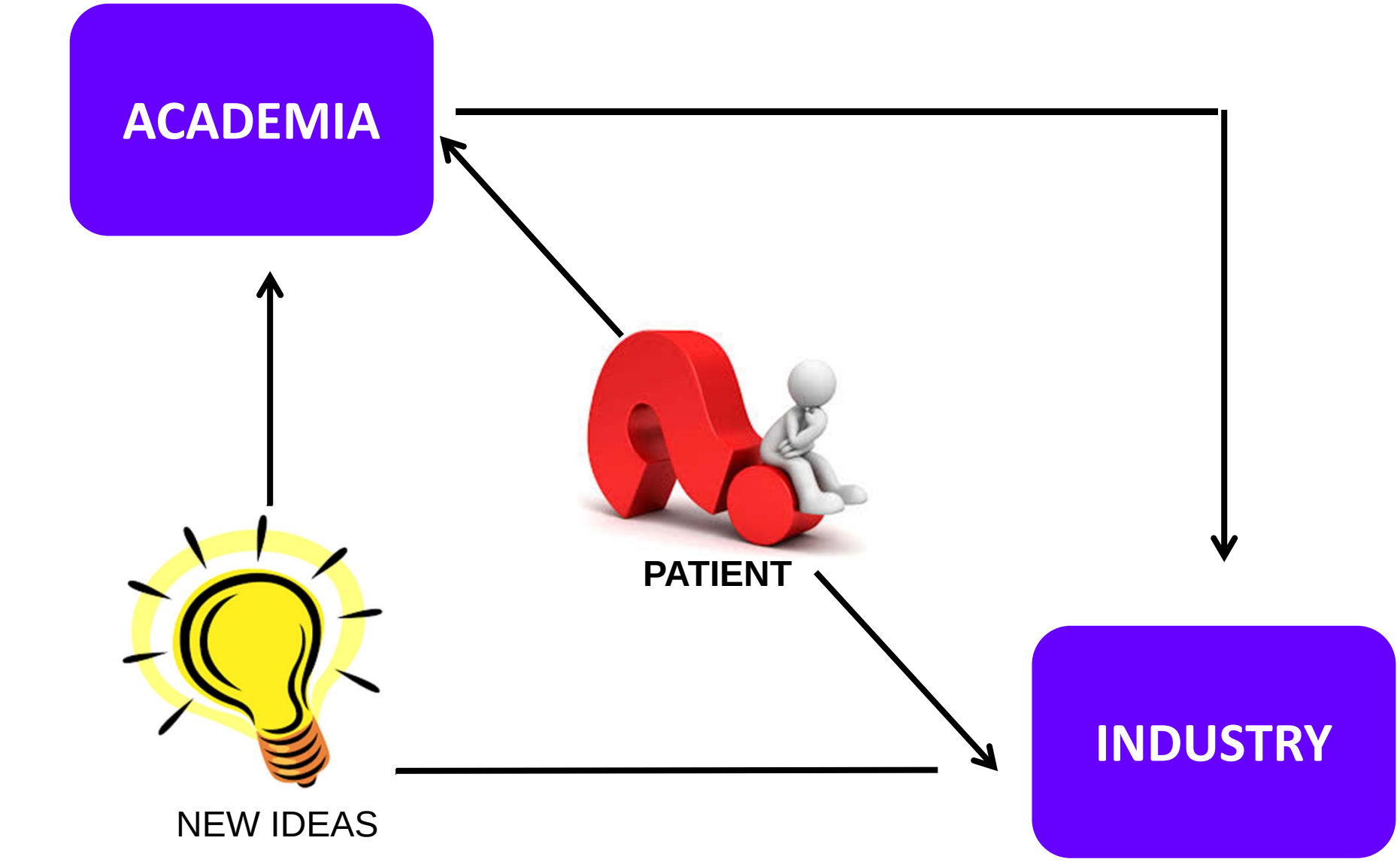
- Future health professionals
- Health science progression

SPECIALIZATION

Pharmaceutical industry objectives:

- **Investigate**
- Develop
- Produce
- Commercialize

Pharmaceutical drugs that can alleviate health conditions and cure diseases


ACADEMIA
PATIENT
INDUSTRY
NEW IDEAS

Is the University preparing the professionals needed by the industry?

MATER EN I+D+I DE MEDICAMENTOS

MASTER´S DEGREE IN DRUG R&D&I

Universidad de Navarra

FACULTY OF PHARMACY AND NUTRITION

UNIVERSIDAD DE NAVARRA

MÁSTER INVESTIGACIÓN, DESARROLLO E INNOVACIÓN DE MEDICAMENTOS (I+D+I)

MASTER'S DEGREE IN DRUG RESEARCH, DEVELOPMENT AND INNOVATION (DRUG R&D&I)

ÁREA CIENCIAS BIOMÉDICAS Y EXPERIMENTALES
AREA OF BIOMEDICAL AND EXPERIMENTAL SCIENCES
CAMPUS PAMPLONA

Universidad de Navarra | M' PROGRAMAS MÁSTER

MATER EN I+D+I DE MEDICAMENTOS

MASTER´S DEGREE IN DRUG R&D&I

Universidad de Navarra

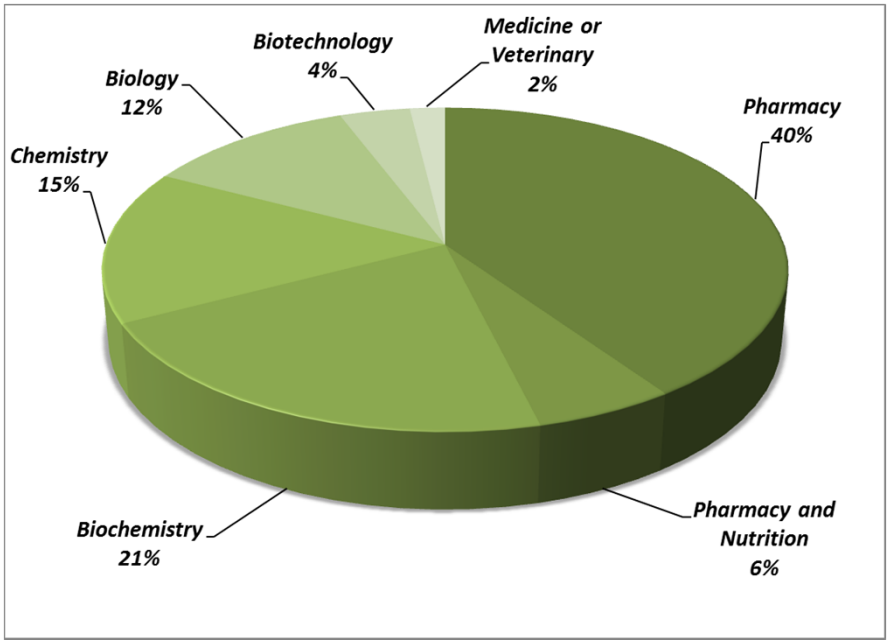
25-year-old program with more than 450 graduates

Full time. On-campus
16 months

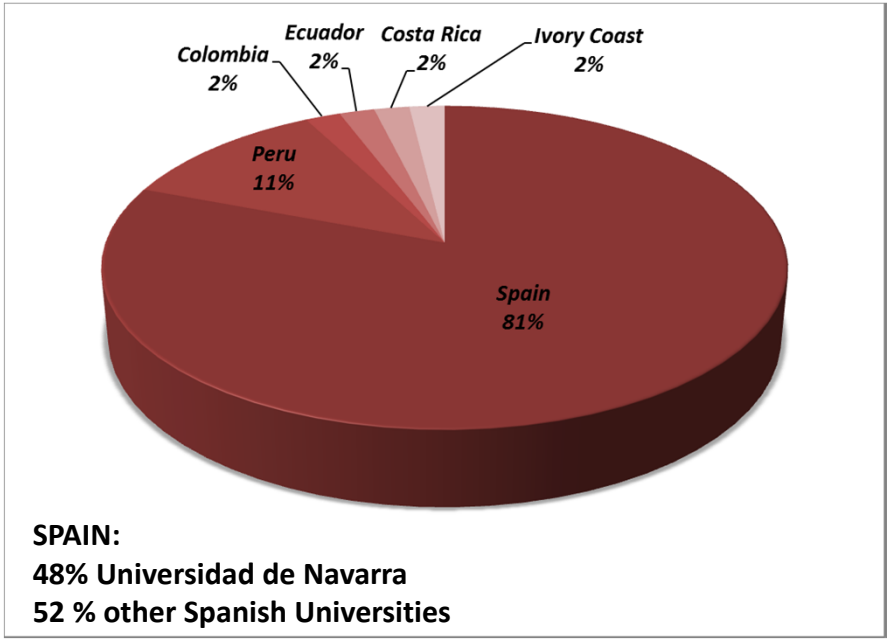
GOAL
prepare students for a professional career in pharmaceutical or related sectors

20-30 STUDENTS/YEAR

Backgrounds



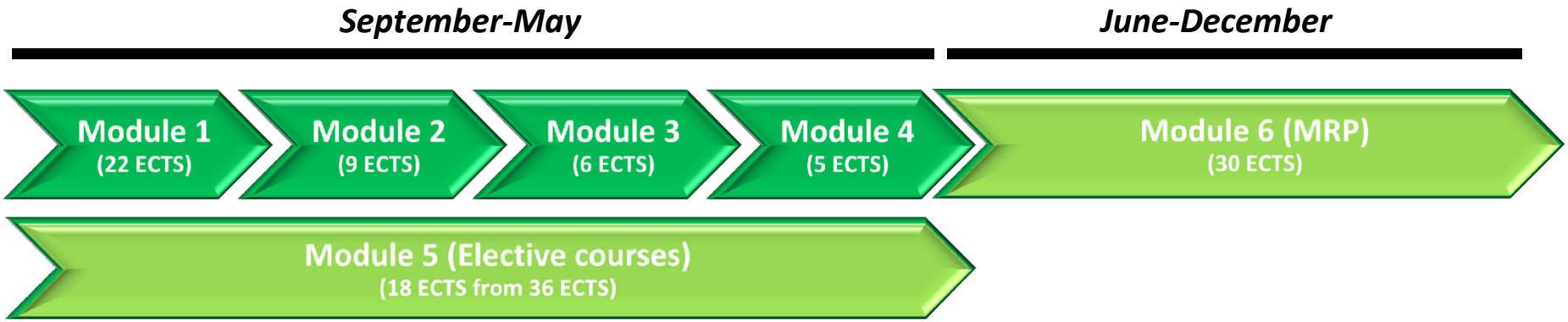
Origin



SPAIN:
48% Universidad de Navarra
52 % other Spanish Universities

Data from 2014-2015 and 2015-2016

Master Program



Module 1. Introduction to Research (22 ECTS)

- **Research tools (9 ECTS)**: Writing Sciences, Animal testing, Laboratory safety, Chemical Biology for Drug Discovery
- **Preclinical and Clinical Research (13 ECTS)**: Preclinical Pharmacology, Preclinical Toxicology, Clinical Research Management

Module 2. Quality (9 ECTS)

- **Quality assessment**
- **Quality control**

Module 3. Regulatory affairs (6 ECTS)

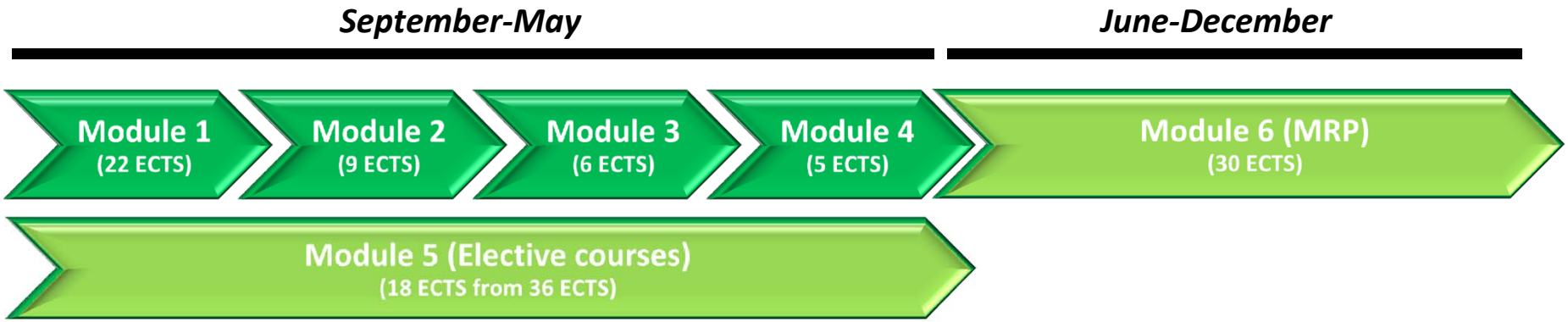
- **Registration and marketing authorisation**

Module 4. Research management (5 ECTS)

- **Project management**
- **Research and technology transfer & patents**
- **Marketing**

MEETINGS WITH PROFESSIONALS: FRIDAYS

Master Program



Module 5. Elective courses (18 ECTS from 36 ECTS)

- PK model-based drug development
- Biostatistics
- Bioinformatics
- Chromatography
- Spectroscopics techniques
- Cell Culture
- Biotechnological drugs
- Drug delivery
- Nanotechnology
- Advanced Scientific English
- Benchmarking
- Outsourcing
- Business planning
- Regulatory requirements for drug advertising
- Pharmacoeconomics

Module 6. Master´s Research project (30 ECTS)

Scientific projects in research departments of the University of Navarra

Since 2013-2014: Pilot study to offer a broad range of MRPs

Master´s Research project

Introduce students into the field of applied research

AIM

research project on a topic from the field of Drug R&D&I

WHAT IS A MASTER RESEARCH PROJECT?

An **original research/management project** developed within the framework of the following lines of work:

- University departments, mainly from the University of Navarra (UN)
- Center for Applied Medical Research. University of Navarra (CIMA)
- Clínica Universidad de Navarra (CUN)
- National or international pharmaceutical companies or related to the pharmaceutical sector

FINAL EVALUATION (WRITTEN REPORT AND ORAL PRESENTATION)

- Committee of 5 professors (50%)

- Supervisor/tutor of each project (50%)

Master´s Research project

AIM

Introduce students into the field of applied research

research project on a topic from the field of Drug R&D&I

WHAT IS NOT A MASTER RESEARCH PROJECT

- It is not an internship or a job
- The written report of the MRP must not be an explanatory report on the research internship, but a ***research work***

What can academia offer to the industry?

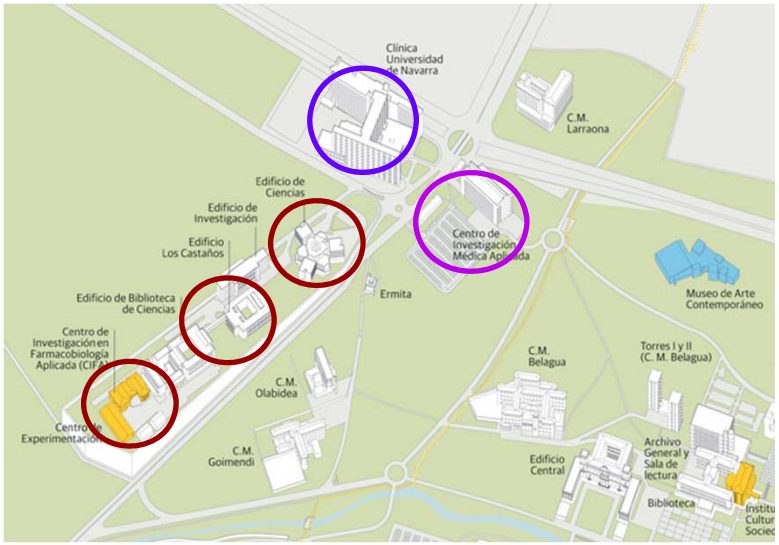
Universidad de Navarra

The University of Navarra is a private University with more than 13.000 students in its five campuses: Pamplona, San Sebastian, Madrid, Barcelona and New York.

BIOTECH ENVIRONMENT

Universidad de Navarra

BIOTECH ENVIRONMENT_



DDUNAV Unit
Formulation (Pilot Plant)
(Bio) Analytical
Toxicology
PKPD Modelling
Animal Facilities

CUN

CIMA
Traslational research
LabDiagnostics

Clinical Studies
Cell Therapy Unit
Radiolabelling Unit PET Tech

1. Capabilities_

General Toxicology

- Single Dose Studies
- Repeated Dose Studies
- Maximum Tolerated Dose Studies

Specific Toxicology

- Local Tolerance Studies
- Skin & Eye Irritation/Corrosion Studies
- Inmunogenicity Studies
- **Mutagenicity / Genotoxicity**
  - **Ames Test**
  - **Mouse Micronucleus Test**
  - **Chromosome aberration Test**
  - **Comet Assay**

Pharmacokinetic & Toxicokinetic Studies

Citotoxicity Assays

Efficacy Studies: in vitro/in vivo models

Development of Animal Model Diseases

Experimental Models

Rat	Mouse
Hamster	Guinea Pig
Rabbit	Dog
Macaque	Others

Administration Routes

Oral	Intravenous
Subcutaneous	Intramuscular
Intraperitoneal	Intravitreous
Dermal	Rectal
Vaginal	Ocular

GLP Certification

WORKING ON A GOOD LABORATORY PRACTICE (GLPs) ENVIRONMENT

Advantages

- Improving laboratory conditions
- Training of master and PhD students
- Offering contract studies

Disadvantages

- Time-consuming
- More expensive

- **Toxicity studies under GLP conditions**
- **Development strategies**
- **Assessment of new/small companies**
- **Expert reports**

THANK YOU FOR YOUR ATTENTION